that should Claim 1 be allowed, Claim 5 will be objected to on this basis under 37 C.F.R. §1.75.

Applicants have amended the claims, which, when considered with the comments hereinbelow, are believed to place the present case in condition for allowance. Favorable consideration is respectfully requested.

Claims 1 and 5 have been amended by incorporating therein the subject matter of Claims 2 and 6, respectively. Further, Claims 3 and 7 have been amended to correct the dependency.

These amendments do not narrow the scope of the claimed subject matter, as they clarify the subject matter with which the fluorine concentration of the SiOF insulating film is being compared.

No new matter has been added to the application.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "Version with markings to show changes made."

Regarding Claims 1 and 5, Office Action alleges that Applicant's Admitted Prior Art discloses 1) a semiconductor device having a plurality of wirings juxtaposed with one another; and 2) a SiOF insulating film in contact with the wirings. The Office Action also alleges that Usami, et al. discloses a semiconductor device where the fluorine concentration of the SiOF at the wiring gap is higher than the fluorine concentration on the wirings. The Office Action alleges that it would have been obvious to one skilled in the art to modify the Admitted Prior Art to include a higher fluorine concentration of SiOF at the wiring gap than on the wirings.

Regarding Claims 2 and 6, the Examiner alleges that it would have been obvious to one skilled in the art to modify the semiconductor device of the Admitted Prior Art to include a film with higher fluorine concentration at the wiring gap than on the wirings, citing the teachings of Usami, et al., and alleging that Usami, et al. disclose a semiconductor device wherein the fluorine concentration of the SiOF in the wiring gap is higher then the fluorine concentration on the wiring and stating that a higher fluorine concentration reduces the capacitance among the wiring and results in a high operating speed.

Regarding Claims 3 and 7, the Examiner alleges that the thickness of the first SiOF film that is recited by the pending claims, namely 1/3 to 1/1 times the thickness of the wirings, has not been established as critical to the device and is an obvious variation.

Applicants respectfully traverse the rejection. As indicated in the Office Action, the applicants admitted prior art does not teach, disclose or suggest that the fluorine concentration at the wiring gap portion is higher than the fluorine concentration of the SiOF insulting film on the wirings. Usami, et al. do not overcome this deficiency.

Applicants respectfully submit that, contrary to the allegations in the Office Action, Usami, et al. teach a device in which there are two insulating layers between the wirings, one having a higher fluorine concentration (102) and one having a low fluorine concentration (103). In Usami, et al. the higher fluorine film (103) contacts the upper side of the wiring. Thus, the combination of Usami, et al. and the prior art would suggest a higher concentration at the upper side of the wirings. By contrast, as shown by the drawings in the device of the present invention and as discussed above, the

higher fluorine film of the present invention contacts only the wire gap area and not the upper side of the wiring. Indeed, the specification, on page 3, explicitly discusses the disadvantages of contact between a higher fluorine film and the wirings, namely an increased likelihood of exfoliation of the wiring. Thus, the combination of the Admitted Prior Art and Usami, et al. suggest a higher fluorine concentration on the upper side of the wiring which is just the opposite of the present invention. Accordingly, the combination does not teach, disclose or suggest a device in which the fluorine concentration is higher in the insulating film at the wiring gap portion than the fluorine concentration of the insulating film on the upper side of the wirings, as claimed.

Moreover, it is this difference in the concentration of fluorine at the wiring gap portion relative to the upper sides of the wirings which is a critical aspect of the present invention and which was not appreciated by the prior art, alone or in combination. There are advantages when the fluorine concentration of the SiOF insulating film or SiOF interlayer insulating film at the wiring gap portion is higher than the fluorine concentration of the SiOF insulating film on the upper side of the wirings or the SiOF interlayer insulating film on the upper side of the wirings, respectively. Attention is directed to Page 11, line 1 to Page 12, line 5 and Figure 10 referred to therein of the present application. The text describes the preparation of a representative semiconductor device and a comparison with a semiconductor device in which the interlayer insulating film and a wiring gap portion both were comprised of SiOF and the fluorine concentration was uniform in the interlayer insulating film. As shown in Figure 10 and discussed in the text of the specification, when the fluorine concentration is high, the amount of exfoliation in the representative semiconductor of the present invention is

zero, as compared to about 10 per wafer when the fluorine concentration was equal in the wiring gap and on the upper side of the wiring. Thus, where fluorine concentration is high, the semiconductor of the present invention has significantly less exfoliation. In fact, the exfoliation of the representative semiconductor of the present invention is zero. Further, if the fluorine concentration is low, the wire capacitance of the semiconductor of the present invention is reduced by about 7% relative to the prior art. The 7% reduction in capacitance of the present invention relative to the prior art semiconductor device is quite significant and marks an unexpected decrease of capacitance.

Thus, Applicants respectfully submit that the combination of the prior art references does not teach or suggest a higher fluorine concentration in the SiOF at the wiring gap portion, as is claimed in the present invention.

The Office Action has rejected Claims 4 and 8 under 35 U.S.C. §103(a) as defining subject matter which is allegedly unpatentable over the Applicants' Admitted Prior Art Figures in view of Usami, et al. and further in view of U.S. Patent No. 5,429,995 to Nishiyama, et al. ("Nishiyama, et al."). The Office Action further alleges that Nishiyama, et al. discloses a semiconductor device where the fluorine concentration of SiOF is greater and lesser than 5 atom % (See Column 4 Lines 30-32). The Office Action alleges that it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the semiconductor device of Applicant's Admitted Prior Art to include SiOF where the fluorine concentration is greater and lesser than 5 atom % as disclosed in Nishiyama, et al. because it manipulates the power consumption and operating speed of the system.

With respect to this rejection, applicants respectfully reiterate their arguments as explained hereinabove for the first '103 rejection. Nishiyama, et al. do not overcome the deficiencies described hereinabove. Nishiyama, et al. disclose that the fluorine concentration may be above or below a certain level. It does not teach, disclose or suggest the advantages when the higher fluorine concentration is in the wiring gap portion. The only reference which comments on the fluorine concentration at the gap portion and the upper side of the wirings is Usami, et al. and it teaches a higher fluorine concentration on the upper side of the wirings. Thus, the combination of references would suggest a higher fluorine concentration on the upper side of the wirings, and not at the wiring gap portion, as claimed. Applicants respectfully submit that the structural distinctions made hereinabove between the present invention and that disclosed by Usami, et al. serve also to show that the present invention is neither taught nor suggested by the combination of the admitted prior art, Usami, et al. and with Nishiyama et al.

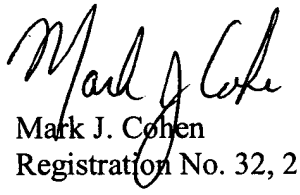
Accordingly, the rejections under 35 U.S.C. §103(a) are overcome, and withdrawal thereof is respectfully requested.

Additionally, the Office Action has alleged that Claim 5 is a substantial duplicate of Claim 1. The Examiner advises that should Claim 1 be allowed, Claim 5 will be objected to under 37 C.F.R. §1.75, on this basis. Applicants respectfully traverse. In response, applicants respectfully point out that while Claim 1 recites a device with *one* layer, containing a plurality of wirings, Claim 5 recites a device with *a plurality* of wiring layers, each of which contains a plurality of wirings. This distinction is further emphasized by the terms used in Claims 1 and 5. More specifically, the term "SiOF insulating film" is used in Claim 1 while the term "SiOF interlayer insulating film" is

used in Claim 5. Thus, the use of different terms clearly indicate that the scope of these claims is not identical. The "SiOF interlayer insulating film" comprises a SiOF insulating film in one layer of the wiring structure, but the "SiOF interlayer insulating film" comprises a plurality of wiring layers. Thus, Claim 5 does not claim the same subject as Claim 1. Therefore, Claim 5 is not a substantial duplicate of Claim 1. Withdrawal of the objection thereof is respectfully requested.

Thus, in view of the Amendment to the claims and the Remarks herein, it is respectfully submitted that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



Mark J. Cohen
Registration No. 32, 211

Scully, Scott, Murphy & Presser
400 Garden City Plaza
Garden City, NY 11530
(516) 742-4343

MJC:lf

"VERSION WITH MARKINGS TO SHOW CHANGES MADE"

IN THE CLAIMS:

Please cancel Claims 2 and 6 without prejudice.

Please amend Claims 1, 3, 5 and 7 as follows:

1. (Amended) A semiconductor device having a plurality of wirings juxtaposed with one another and a SiOF insulating film being in contact with the wirings, characterized in that the fluorine concentration of the SiOF insulating film at a wiring gap portion is set to be higher than the fluorine concentration of the SiOF insulating film on the upper side of the wirings.

3. (Amended) The semiconductor device as claimed in claim 3 [2], wherein the thickness of the first SiOF film at a center of the wiring gap portion is within the range of 1/3 to 1/1 times of the thickness of the wirings.

5. (Amended) A semiconductor device having a plurality of wiring layers each having a plurality of wirings juxtaposed with one another and a SiOF interlayer insulating film, characterized in that the fluorine concentration of the SiOF interlayer insulating film at a wiring gap portion is set to be higher than the fluorine concentration of the SiOF interlayer insulating film on the upper side of the wirings.

7. (Amended) The semiconductor device as claimed in claim 5 [6], wherein the thickness of the first SiOF film at a center of the wiring gap portion is within the range of 1/3 to 1/1 times of the thickness of the wirings.